## REMARKS

Claims 1-20 are pending and at issue in the application with claims 1 and 5 being independent claims. Claim 5 has been amended. As such, 2 independent claims exist in the application as previously paid for, and 20 total claims exist in the application as previously paid for. The requisite extension fee of $525.00 is submitted herewith. However, the Commissioner is hereby authorized to charge any deficiency in the amount enclosed or any additional fees which may be required under 37 CFR 1.16 or 1.17 to deposit account number 13- 2855. Reconsideration and withdrawal of the rejections in view of the remarks below is respectfully requested.

The applicants respectfully submit that the amendments to claim 5 overcome the objections against claims 5-20 for minor informalities.

The applicants respectfully traverse the rejections of claims 1-20 as unpatentable under 35 U.S.C. §103(a) over Ragner et al. (U.S. Patent No. 6,175,196) in view of Yu (U.S. Patent No. 6.072,386).

Independent claim 1 recites a device for visualization of information on a rotating visible surface comprising light sources, a synchronization sensor, a light sensor and a microcontroller having an independent power supply. Independent claim 5 recites a device for visualization of information on a rotating surface comprising a plurality of light sources disposed in an array on a substrate, a light sensor mounted on the substrate, a synchronization sensor mounted on the substrate, and a microcontroller mounted on the substrate and operatively coupled to the light sources and the synchronization sensor. The synchronization sensor is responsive to gravity when mounted on a rotating surface whose axis of rotation is not perpendicular to the Earth's surface and actuates as a position relative to a given immovable point if the rotation axis is perpendicular to the Earth's surface.

**Claim 1**

The applicants submit that the action does not establish a *prima facie* case of obviousness against claims 1-4 because the combination of Ragner et al. and Yu does not disclose all of the

limitations of independent claim 1. In particular, contrary to the assertion of the action, Ragner et al. does not disclose or suggest a plurality of light emitting diodes evenly disposed in an array. Although Ragner et al. suggests that "one or more illuminating devices such as Light Emitting Diodes (LEDs)" may be used as the illumination device 26, there is no further disclosure or suggestions that the LEDs are evenly disposed in an array. Indeed, as Ragner et al. is directed to a photo-sensitive illuminated skate wheel, the skate wheels are too small to host an array of LEDs. For example, as clearly seen in Fig. 6 of Ragner et al., only one LED (LED1) is provided on each side of the wheel, rather than an array.

Additionally, contrary to the assertion of the action, Ragner et al. does not disclose or suggest that the substrate is flexible. While Ragner et al. discloses a circuit board 82 that follows the contour of the wheel (Fig. 6), there is no disclosure or suggestion that the circuit board 82, or any corresponding substrate, is flexible. Simply because the circuit board 82 follows the contour of the wheel does not mean it is flexible, given than a rigid circuit board may also be contoured in a similar manner.

Further, contrary to the assertion of the action, Ragner et al. does not disclose or suggest that a synchronization sensor is actuated at a position relative to a given point if the rotation axis is perpendicular to the Earth's surface. To the best of the applicants' understanding, the action asserts the acceleration/motion sensor 22 corresponds to the claimed synchronization sensor. Ragner et al. discloses the acceleration/motion sensor 22 as a spring mass inside a metal can, as an accelerometer on an integrated circuit that detects acceleration or other sensors that detect rotational acceleration such as infrared motion sensors. (See column 4, lines 30-40). In short, acceleration/motion sensor 22 of Ragner et al. is actuated upon detecting motion, but not when the axis of rotation is perpendicular to the Earth's surface.

Also contrary to the assertion of the action, Ragner et al. does not disclose or suggest a control panel. To the best of the applicants' understanding, the action asserts the acceleration/motion sensor 22 corresponds to the claimed synchronization sensor, the photo sensor 24 corresponds to the claimed light sensor, the illumination device 26 corresponds to the

claimed light sources and the battery 20 corresponds to the claimed power supply. However, Ragner et al. does not appear to disclose anything corresponding to a control panel.

Still further, contrary to the assertion of the action, Ragner et al. does not disclose or suggest that a microcontroller has a serial interface. Indeed, as acknowledged by the action, Ragner et al. does not disclose a microcontroller. As a logical result, Ragner et al. cannot disclose that a microcontroller has a serial interface. Although the action appears to state that the integrated circuit has a serial interface, this is irrelevant as claim 1 recites that the microcontroller has a serial interface.

While Ragner et al. does not disclose the features of claim 1 as discussed above, Yu does not make up for the deficiencies of Ragner et al. In particular, while Yu discloses a processor 331 (cited in the action as the recited microcontroller), Yu does not appear to disclose a control panel connected thereto. The control panel in claim 1 enables input of data into the memory via the serial interface. The inputted data may be for new pictures or patterns and to determine the sequence of their visualization. However, Yu appears to refer only to a predetermined picture or character. For example, the action cites column 1, lines 37-42 of Yu as disclosing "a library with a plurality of different visual patterns." However, Yu only discloses "a predetermined picture or character" in this citation, and does not disclose "a library with a plurality of different visual patterns." According to the citation referenced by the action, the device of Yu visualizes non-changeable pictures or characters permanently stored in the memory. As such, not only does Yu not disclose a control panel, but Yu does not have a need for a control panel and therefore does not even suggest a control panel.

Yu also does not disclose or suggest a flexible substrate. In particular, neither the base board 31 nor the fixing board 2 of Yu is disclosed as being flexible.

Lastly, the action incorrectly asserts that while "Ragner et al. and Yu do not teach the LEDs being of one or various colors, wherein the LEDs are RGB, ... it would be obvious to the skilled artisan to use the LEDs having the same or different colors if desired." As an initial matter, a mere "desire" for such a combination does not provide a reason why a person of ordinary skill in the art would have combined LEDs having the same or different colors with

Ragner et al. and/or Yu in the manner claimed. In other words, the action has not provided any reason as to why such a combination would be desired.

Further, it is not simple matter to control and operate a device with LEDs being of different colors to visualize complex pictures or patterns, as may be accomplished by the control panel of claim 1. Accordingly, it cannot be obvious to use the LEDs having the same or different colors with Ragner et al. and/or Yu, even if such a combination were "desired." Indeed, LEDs and RGB are completely different electronic components. Red Green Blue (RGB) are not diodes, whereas simple Light Emitting Diodes (LEDs), as disclosed in Ragner et al. and Yu, have two electrodes and emit light of only one color. On the other hand, RGB components have 4 electrodes and emit different color lights that depend of the applied voltage on the different electrodes. The simple replacement of ordinary LEDs with RGB is not possible because RGB needs very complex control for emitting light of respective color. Therefore it is not obvious haw RGB could be applied to the devices described in Ragner et al. and Yu.

Although the action cites various portions of Ragner et al. as disclosing features of claim 1, it is entirely unclear as to what feature each cited portion is purported to disclose. Nonetheless, the applicants respectfully submit that none of the citations to Ragner et al. support the assertions of the action, as demonstrated by the above remarks. Accordingly, independent claim 1, and dependent claims 2-4, are not rendered obvious by Ragner et al. alone or in combination with Yu, and the grounds for rejection cannot be sustained.

**Claim 2**

As an initial matter, the action incorrectly cites column 5, lines 1-6 of Yu as disclosing groups of LEDs arranged in one of an array, a checkered pattern or any other preset pattern in the same plane or at various distances from the substrate. The applicants note that there is no column 5, lines 1-6 in Yu. As such, it is entirely unclear what disclosure in Yu is being relied upon for this feature.

Nonetheless, the applicants submit that the action does not establish a *prima facie* case of obviousness against claim 2 because the combination of Ragner et al. and Yu does not disclose

all of the limitations of claim 2, in addition to not disclosing all of the limitations of claim 1. In particular, Yu does not disclose or suggest situating LEDs in more than one array or in a checkered pattern, or in any other preset pattern in the same plane or at various distances from the substrate. Instead, Yu only discloses one simple array of LEDs. However, by placing LEDs at various distances from the substrate and/or arranging them in certain patterns, as recited in claim 2, provides the possibility of a stereoeffect of the illuminated figures during the rotation of the wheel, which is not possible with the simple array of Yu.

As discussed above, Ragner et al. does not disclose or suggest an array of LEDs, much less in more than one array or in a checkered pattern, or in any other preset pattern in the same plane or at various distances from the substrate. Accordingly, claim 2 is not rendered obvious by Ragner et al. alone or in combination with Yu, and the grounds for rejection cannot be sustained.

**Claim 3**

As an initial matter, the action incorrectly cites column 2, lines 25-30 of Yu as disclosing that the substrate is hard and has a preset profile. The applicants note that this portion of Yu makes no mention of a substrate or equivalent. Likewise, Fig. 7 of Yu only discloses the cover body of the device when mounted on a bicycle wheel, but not a substrate. As such, it is entirely unclear what disclosure in Yu is being relied upon for this feature.

Nonetheless, the applicants submit that the action does not establish a *prima facie* case of obviousness against claim 3 because the combination of Ragner et al. and Yu does not disclose all of the limitations of claim 3, in addition to not disclosing all of the limitations of claim 1. In particular, Yu does not disclose or suggest a substrate that is hard and has a preset profile. While Fig. 2 of Yu discloses a base board 31 on which the LEDs are disposed, the base board is hidden in a special box comprising a fixing board 2 and cover body 4. When considering Yu in its entirety, it is clear from Fig. 2 that the base board 31 is plane, as opposed to having a present profile. While Yu also discloses a fixing board 2, the fixing board 2 also does not have a present profile. As discussed above, the LEDs placed at various distances from the substrate provides a stereoeffect. Likewise, by having a substrate with a preset profile, the LEDs thereon may

provide a stereoeffect, which is not possible with the simple base board 31 or fixing board 2 of Yu.

Accordingly, claim 3 is not rendered obvious by Ragner et al. alone or in combination with Yu, and the grounds for rejection cannot be sustained.

**Claim 4**

The applicants submit that the action does not establish a *prima facie* case of obviousness against claim 4 because the combination of Ragner et al. and Yu does not disclose all of the limitations of claim 4, in addition to not disclosing all of the limitations of claim 1. In particular, neither Ragner et al. nor Yu discloses or suggests that the bottom of the substrate is covered with a sticky foil, as fully acknowledged by the action. However, the action incorrectly asserts that while "Ragner et al. disclose a device for visualization of information on a rotating visible surface that can be placed at a proper position on a wheel ... Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to utilize the sticky foil on the system of Ragner's et al. and Yu as needed." As an initial matter, merely stating that a sticky foil may be utilized "as needed" is a mere conclusion and does not provide a reason why a person of ordinary skill in the art would have combined sticky foil with Ragner et al. and/or Yu in the manner claimed. In other words, the action has not provided any reason as to why such a combination would be "needed."

Further, in Ragner et al. the circuit is placed in the proper position molding it in the emptied places in the skate wheel covered with a transparent plastic material for producing lights indicating the presence of the object. As such, there is no need for a sticky foil, as such a device is integrated when the wheel is fabricated. On the other hand, the device of claim 4 may be implemented with a wheel well after the wheel is constructed.

The device of Yu is a specially designed fixing board to be mechanically mounted to the spokes of a bicycle wheel. The proper position of the device of D2 is close to the rim of the wheel to be synchronized by the magnet 13, and affixed to the spokes by a stopper member 24. (See column 2, lines 5-6; Figs. 2 and 7). Again, there is no need for a sticky foil.

On the other hand, the device as claimed may be used for cars by installing the device on the wheel rims, hubs etc. (See application, Fig. 9). There are many complicated mechanical ways of mounting such devices, but using the combination of a flexible substrate that holding all components of the device with the sticky foil allows the installation of the device in existing varieties of convex, concave or combined curvilinear surfaces in an easy and reliable manner.

Accordingly, claim 4 is not rendered obvious by Ragner et al. alone or in combination with Yu, and the grounds for rejection cannot be sustained.

**Claim 5**

The applicants submit that the action does not establish a *prima facie* case of obviousness against claims 5-20 because the combination of Ragner et al. and Yu does not disclose all of the limitations of independent claim 5. In particular, contrary to the assertion of the action, Ragner et al. does not disclose or suggest a plurality of light emitting diodes disposed in an array. As with claim 1, although Ragner et al. suggests that "one or more illuminating devices such as Light Emitting Diodes (LEDs)" may be used as the illumination device 26, there is no further disclosure or suggestions that the LEDs are disposed in an array, particularly where the skate wheels of Ragner et al. are too small to host an array of LEDs, as evidenced by the one LED on each side of the wheel in Fig. 6.

In addition, contrary to the assertion of the action, Ragner et al. does not disclose or suggest that a synchronization sensor is actuated at a position relative to a given immovable point if the rotation axis is perpendicular to the Earth's surface. Again, as with claim 1, Ragner et al. discloses the acceleration/motion sensor 22 as a spring mass inside a metal can, as an accelerometer on an integrated circuit that detects acceleration or other sensors that detect rotational acceleration such as infrared motion sensors. (See column 4, lines 30-40). The acceleration/motion sensor 22 of Ragner et al. is actuated upon detecting motion, but not when the axis of rotation is perpendicular to the Earth's surface.

While Ragner et al. does not disclose the features of claim 5 as discussed above, Yu does not make up for the deficiencies of Ragner et al. In particular, Yu does not disclose or suggest a

synchronization sensor as claimed, nor is Yu cited for this purpose. Accordingly, independent claim 5, and dependent claims 6-20, are not rendered obvious by Ragner et al. alone or in combination with Yu, and the grounds for rejection cannot be sustained.

**Claim 6**

The applicants submit that the action does not establish a *prima facie* case of obviousness against claim 6 because the combination of Ragner et al. and Yu does not disclose all of the limitations of claim 6, in addition to not disclosing all of the limitations of claim 5. In particular, neither Ragner et al. nor Yu discloses or suggests a programmable microcontroller adapted to receive data via an interface. While column 2, lines 25-32 of Yu discloses a processor 331 as cited by the action, there is no disclosure that the processor 331 is programmable. Further, Yu does not disclose an interface whereby the processor 331 can receive data. Accordingly, claim 6 is not rendered obvious by Ragner et al. alone or in combination with Yu, and the grounds for rejection cannot be sustained.

**Claim 8**

The applicants submit that the action does not establish a *prima facie* case of obviousness against claim 8 because the combination of Ragner et al. and Yu does not disclose all of the limitations of claim 8, in addition to not disclosing all of the limitations of claim 5. In particular, neither Ragner et al. nor Yu discloses or suggests a microcontroller that alters power consumption. While Ragner et al. may disclose altering power consumption, the alteration is achieved in an analog manner, and not by a microcontroller. Accordingly, claim 8 is not rendered obvious by Ragner et al. alone or in combination with Yu, and the grounds for rejection cannot be sustained.

**Claim 11**

The applicants submit that the action does not establish a *prima facie* case of obviousness against claim 11 because the combination of Ragner et al. and Yu does not disclose all of the

limitations of claim 11, in addition to not disclosing all of the limitations of claim 5. In particular, contrary to the assertion of the action, Ragner et al. does not disclose or suggest a plurality of light emitting diodes evenly disposed in an array. As with claim 1, while Ragner et al. suggests that "one or more illuminating devices such as Light Emitting Diodes (LEDs)" may be used as the illumination device 26, there is no further disclosure or suggestions that the LEDs are evenly disposed in an array. Indeed, as Ragner et al. is directed to a photo-sensitive illuminated skate wheel, the skate wheels are too small to host an array of LEDs. For example, as clearly seen in Fig. 6 of Ragner et al., only one LED (LED1) is provided on each side of the wheel, rather than an array. Accordingly, claim 11 is not rendered obvious by Ragner et al. alone or in combination with Yu, and the grounds for rejection cannot be sustained.

**Claim 12**

Claim 12 was rejected on similar grounds as for claim 1. Accordingly, claim 12 is not rendered obvious by Ragner et al. alone or in combination with Yu for the same reasons as provided above for claim 1 for the corresponding features, and the grounds for rejection cannot be sustained.

**Claim 13**

Claim 13 was rejected on similar grounds as for claim 1. Accordingly, claim 12 is not rendered obvious by Ragner et al. alone or in combination with Yu for the same reasons as provided above for claim 1 for the corresponding features, and the grounds for rejection cannot be sustained.

**Claim 14**

The applicants submit that the action does not establish a *prima facie* case of obviousness against claim 11 because the combination of Ragner et al. and Yu does not disclose all of the limitations of claim 11, in addition to not disclosing all of the limitations of claim 5. In

particular, contrary to the assertion of the action, column 2, lines 12-16 Yu does not disclose or suggest a driver. Instead, the cited text of Yu merely reads:

> a light emitting device 3 disposed on a base board 31 between the fixing board 2 and the cover body 4, including multiple light sources 32 and a controlling circuit 33. In this embodiment, the light sources 32 are light emitting diodes (briefly called LED).

There is no mention of a driver. Accordingly, claim 14 is not rendered obvious by Ragner et al. alone or in combination with Yu, and the grounds for rejection cannot be sustained.

**Claim 15**

The applicants submit that the action does not establish a *prima facie* case of obviousness against claim 15 because the combination of Ragner et al. and Yu does not disclose all of the limitations of claim 15, in addition to not disclosing all of the limitations of claim 5. In particular, contrary to the assertion of the action, Fig. 7 of Yu does not disclose or suggest a flexible substrate. In particular, neither the base board 31 nor the fixing board 2 of Yu is disclosed as being flexible, nor does such a feature appear anywhere in Yu. It appears the action misinterprets Fig. 7 of Yu as showing several patterns of LEDs (e.g., "V", "U", "T", "S", "R", etc.) placed around the bicycle wheel with the incorrect conclusion that the substrate for the various LED patterns are flexible in order to follow the contour of the wheel. However, Fig. 7 actually shows how the device of Yu appears while the wheel is in motion, which is evident from column 2, line 46 through column 3, line 3 which describes the change in illumination of the light sources 32 as the light sources 32 change position, thereby creating the appearance of characters by the "persistence of vision". That is, the only "pattern" is a single line of light sources 32 disclosed in Yu, and the only "substrate" for the light sources 32 is the base board 31. Yu does not disclose the base board 31 as being flexible. Likewise, Yu does not disclose the fixing board as being flexible.

Further, the action itself is contradictory by citing the "substrate" of Yu as being rigid in the rejection of claim 3, while now citing the "substrate" of Yu as being flexible in the rejection

of claim 15. Nonetheless, claim 15 is not rendered obvious by Ragner et al. alone or in combination with Yu, and the grounds for rejection cannot be sustained.

**Claim 16**

Claim 16 was rejected on the same grounds as for claim 3. Accordingly, claim 16 is not rendered obvious by Ragner et al. alone or in combination with Yu for the same reasons as provided above for claim 3, and the grounds for rejection cannot be sustained.

**Claim 17**

The applicants submit that the action does not establish a *prima facie* case of obviousness against claim 17 because the combination of Ragner et al. and Yu does not disclose all of the limitations of claim 17, in addition to not disclosing all of the limitations of claim 5. In particular, as with claim 1, Ragner et al. does not disclose or suggest a control panel. While the action now cites column 3, lines 60-65 of Ragner et al. as disclosing a control panel, this citation does not support the action's assertion. Instead, this portion of Ragner et al. only discloses "control switches," and not a control panel as recited in claim 17.

Likewise, Yu does not appear to disclose a control panel. Instead, Yu appears to refer only to a predetermined picture or character. For example, Yu discloses "a predetermined picture or character." The device of Yu visualizes non-changeable pictures or characters permanently stored in the memory. As such, not only does Yu not disclose a control panel, but Yu does not have a need for a control panel and therefore does not even suggest a control panel.

Accordingly, claim 17 is not rendered obvious by Ragner et al. alone or in combination with Yu, and the grounds for rejection cannot be sustained.

**Claim 18**

The applicants submit that the action does not establish a *prima facie* case of obviousness against claim 18 because the combination of Ragner et al. and Yu does not disclose all of the limitations of claim 18, in addition to not disclosing all of the limitations of claim 5. In

particular, as with claim 1, Ragner et al. does not disclose or suggest that a microcontroller has a serial interface, because Ragner et al. does not disclose or suggest a microcontroller in the first place, as acknowledged by the action.

Likewise, Yu does not disclose or suggest a serial interface. Contrary to the assertion of the action, Fig. 5 of Yu does not disclose a serial interface in Fig. 5. Indeed, the action makes no attempt to identify what feature of Fig. 5 corresponds to a serial interface. Accordingly, claim 18 is not rendered obvious by Ragner et al. alone or in combination with Yu, and the grounds for rejection cannot be sustained.

**Claim 19**

The applicants submit that the action does not establish a *prima facie* case of obviousness against claim 19 because the combination of Ragner et al. and Yu does not disclose all of the limitations of claim 19, in addition to not disclosing all of the limitations of claim 5. In particular, as with claim 2, Yu does not disclose or suggest situating LEDs in more than one array or in a checkered pattern, or in any other preset pattern in the same plane or at various distances from the substrate. The action appears to misinterpret Figs. 6 and 7 of Yu as showing several patterns of LEDs (e.g., "U" and "T" in Fig. 6; "V", "U", "T", "S", "R", etc. in Fig. 7). However, Figs. 6 and 7 are actually showing how the device of Yu appears while the wheel is in motion. Instead, Yu only discloses one simple array of LEDs. However, by placing LEDs at various distances from the substrate, as recited in claim 19, provides the possibility of a stereoeffect of the illuminated figures during the rotation of the wheel, which is not possible with the simple array of Yu.

Ragner et al. also does not disclose or suggest an array of LEDs, much less P parallel groups of LEDs in a preset pattern in the same plane or at various distances from the substrate. Accordingly, claim 19 is not rendered obvious by Ragner et al. alone or in combination with Yu, and the grounds for rejection cannot be sustained.

**Claim 20**

Claim 20 was rejected on the same grounds as for claim 4. Accordingly, claim 20 is not rendered obvious by Ragner et al. alone or in combination with Yu for the same reasons as provided above for claim 4, and the grounds for rejection cannot be sustained.

**Conclusion**

For the foregoing reasons, reconsideration and withdrawal of the rejections of the claims and allowance thereof are respectfully requested. Should the examiner wish to discuss the foregoing, or any matter of form, in an effort to advance this application towards allowance, the examiner is urged to telephone the undersigned at the indicated number.

Respectfully submitted,

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**October 17, 2007**